

SOME NEW RECORDS OF COCCIDÆ.

BY GEO. B. KING, LAWRENCE, MASS.

The following list of Coccidæ, which have been sent to me for study, adds considerably to the known range of a large number of species, while several new food-plants are indicated; and as no records of the species herein cited have appeared, to my knowledge, other than in one or two instances in some of my published papers on the *Coccidæ*, it seems, therefore, that these miscellaneous results should be recorded. It will also show to some extent what is being done in a private laboratory for the advancement of science. I have classified the records for my own convenience into States as follows:

MAINE.

These were all collected and sent to me by Mr. Oliver O. Stover, of Freeport, Maine, in 1901; the first two species living out of doors and the remainder being found under glass in greenhouses.

Calymnatus hesperidum and *Aspidiotus hederæ* on *Hedera hybernica* were associated together.

Mytilaspis ulmi, L., on apple twigs, Portland, Me.

Chionaspis furfurus, Fitch, on bark of apple, Westbrook, Me.

Diaspis Boisduvalii, Sign., on *Latania barbarica* and *Livingstonia Chinensis*, Portland, Me.

Aspidiotus hederæ, Vall., on *Oleander* at Westbrook, and on *Japonica variegata*, Portland, and on *Hedera hybernica* at Portland, Me.

Calymnatus hesperidum, L., on *Yucca*, Westbrook, Me.

VERMONT.

These were collected by Mr. C. Abbot Davis, of Providence, R. I., in 1902, at Burlington, Vt.

Eulecanium quercitronis, Fitch., on oak.

Pulvinaria innumerabilis, Rathv., on maple.

CONNECTICUT.

Prof. W. E. Britton, of the Connecticut Agricultural Experiment Station, New Haven, Conn., sent the following in 1902:

Saissetia filicum, Boisd., on fern (*Eyrtonium falcatum*) in Station greenhouse.

Saissetia hemispherica, Targ., on fern (*Pteris trimula*), and *Dryopteris mollis*? in Station greenhouse.

Eulecanium Kingii, Ckll., on sassafras, and an *Eulecanium*, Sp., found on grapevine, Bristol, Conn., which were in poor condition and undeterminable.

Dr. Geo. Dimmock, of Springfield, Mass., on a short collecting trip found the following species in Conn. in 1900 :

Saissetia hemisphaerica, Targ., on two distinct species of fern in a greenhouse, Warehouse Point, Conn.

Mytilaspis ulmi, L., on leather leaf (*Cassandra calyculata*) and on *Fraxinus Americana*, Milford, Conn.

Chrysomphalus dictyospermi, Marg., on *Ficus elastica* under glass, Enfield, Conn.

Asterolecanium variolosum, Ratz.—Sent to me recently by Prof. Britton; on scarlet oak; found by the superintendent of parks in Hartford, on a single tree in a nursery. The scales evidently had killed the tree, as the twigs sent me were dead.

RHODE ISLAND.

Mr. C. Abbot Davis collected and sent the following in 1902 :

Eulecanium nigrofasciatum, Perg., on soft maple in Roger Williams Park, Providence, R. I., and attended by ants.

Eulecanium quercitronis, Fitch., on black and white oak and white maple; also on cork tree (imported) in Roger Williams Park, Prov., R. I.

Eulecanium Fletcheri, Ckll., on white cedar, Providence.

Eulecanium cerasifex, Fitch., on wild black cherry, peach and pear.

Eulecanium Cockerelli, on wild black cherry, Prov., R. I.

Eulecanium persicae, Fabr., on linden and pear, attended by *Formica lasioides*, var. *picea*, Em.

Eulecanium Canadense, Ckll., on red and white maple, tulip tree, linden and two other imported trees, species unknown, in Roger Williams Park, Providence.

Eulecanium cynosbati, Fitch., on locust, Providence.

Calymnatus hesperidum, L., on orange in a dwelling-house, Providence.

Pulvinaria innumerabilis, Rathv., on an imported tree in Roger Williams Park, Prov.

Pulvinaria rhois, Ehrh., on sumac, Providence.

Kermes Kingii, Ckll., on black oak, in Roger Williams Park, Prov.

Kermes pubescens, Bogue, on white oak in Roger Williams Park, Prov.

Gossyparia ulmi, Geoff., on bark of elm in Roger Williams Park, Prov.

Phenococcus acericola, King, on maple, Providence.

Aspidiotus, sp., probably new, on white pine, Providence; not sufficient for study.

Chionaspis furfurus, Fitch., on bark of apple, Providence.

Chionaspis pinifolii, Fitch., on white and Scotch pine, Roger Williams Park, Prov.

Chionaspis Americana, Johns, on elm, Providence.

Mytilaspis ulmi, L., on dogwood?

The following species were found associated together: *E. cerasifex* and *E. Cockerelli* on wild cherry, *E. persicæ* and *E. Canadense* on linden, *E. persicæ* and *E. cerasifex* on pear, *E. cerasifex* and *E. Cockerelli* on elm.

GEORGIA.

The following were received from Prof. W. M. Scott, State Entomologist of Georgia, 1902:

Pulvinaria innumerabilis, Rathv., on pecan and black gum at Albany.

Eulecanium magnoliarum, Ckll., on *Magnolia grandiflora*, Marshallville.

Eulecanium tulipiferæ, Cook, on tulip tree.

MISSISSIPPI.

The following were received from Prof. Glenn W. Herrick, of the Mississippi Agricultural Experiment Station in 1902:

Chrysomphalus tenebricosus, Comst., on maple, Vicksburg, Miss.

Aspidiotus perniciosus, Comst., on peach, Deean, Miss.

Aspidiotus Forbesi, Johns, on peach, Stinson, Miss.

ILLINOIS.

Eulecanium fraxini, King, on bark of ash, Urbana, Ill., sent in by Prof. F. M. Webster, January, 1903.

Eulecanium Folsomi, Ckll. This is a small flat species found by Prof. Folsom in 1902 on paw-paw, at Urbana, Ill.

Antennæ 6-jointed, in μ as follows:

Joints	1	2	3	4	5	6
	40	36	92	16	20	40
	40	36	96	20	24	36

Legs thin; coxa, 88; femur and trochanter, 108; tibia, 92; tarsus, 76; claw, 16; marginal spines of two sizes, 16 and 32 μ long. Stigmatal spines in threes, middle one 60 μ long; laterals, 32 μ long. I think the above species is yet to be published by Prof. Cockerell.

IOWA.

These were sent by Prof. Cockerell, collected by Prof. W. D. Hunter in 1900, now of the Dept. of Agriculture at Washington, D. C.

Eulecanium Cockerelli, Hunter, Ames, Iowa.

Eulecanium Websteri, King, on *Celtis occidentalis*; also on *Acer saccharinum*, Ames, Iowa.

ARIZONA.

Pulvinaria innumerabilis, Rathv., on *Acer negundo*, Prescott, Ariz.; coll. Cockerell, March 27, 1902.

CALIFORNIA.

The following species were collected by Prof. Cockerell while taking some students and teachers through part of California in the summer of 1901, and were referred to me for study:

Aspidiotus hederæ, Vall., on leaves of *Eucalyptus*, Pasadena, Calif.

Aspidiotus rapax, Comst., on *Isomeris arborea* at San Pedro, Calif.

Eriococcus adenostomæ, Ehrh., on *Adenostoma* at La Jolla, Calif.; also on the same food-plant at San Pedro, Calif.

Ceroplastes irregnaris, on *Atriplex confertifolia* and *A. polycarpa*? at Lone Pine, Inyo Co., Calif. They occur only near or under the ground.

Dactylopius salinus, Ckll., on grass on cliffs by the sea at La Jolla, Calif.

Chionaspis pinifolii, Fitch, on *Pinus*, sp.

Pseudolecanium Californicum, Ehrh.

Saissetia oleæ, Bern., was also found on this trip by Prof. Cockerell.

Saissetia hemisphærica, Targ., on pepper tree (*Schianus malla*), La Jolla, Calif.

COLORADO.

The following species were collected by Prof. Bethel, High School, Denver, Colorado, and sent to Prof. Cockerell, who turned them over to me:

Chionaspis Lintneri, Comst., on *Ceanothus*, Steamboat Springs, Colorado.

Phenacoccus Cockerelli, n. sp.

♀ Scale red-brown, resting on a small white cottony sack projecting a little behind the insect's body. Size small; owing to its position upon the twigs, an accurate measurement could not be obtained. Cleared and pressed under a cover glass, 2 mm. in diameter, a little narrow behind. Derm colourless, mouth-parts yellowish-brown, antennæ and legs slightly tinged with yellow. Anal lobes well developed, rounded, with one long bristle and several short spear-shaped spines and a few thin hairs; they also show several round gland pits, these due, perhaps, to some of the spines being lost in process of clearing. No spines, pits or hairs on the derm.

Antennæ 9-jointed; measurements in μ , joints:

1	2	3	4	5	6	7	8	9
36	52	48	36	40	36	36	32	60

Front leg coxa, 80; femur and trochanter, 200; tibia, 132; tarsus, 72; claw, 28. Hab.—On *Amelanchier*, Steamboat Springs, Colorado.

Aspidiotus Howardi, Ckll. (var. *ancylus* ?), on ash (*Fraxinus*), Denver, Col., July 28, 1902. The scales on the under side of leaf (along the mid-rib) are very pale, while those on the upper side are dark. The leaf on both sides along the mid-rib is faded to a light yellow, due from the infestation.

These were sent to Prof. Cockerell by Prof. Gillette, of the Agricultural Experiment Station, Fort Collins, Col. A single scale on currant twig, which proved to be *Eulecanium quercifex*, Fitch.

Phenacoccus Cockerelli, on service berry (*Amelanchier*), at Gunnison, Col.; coll. Prof. Ball, Sept. 20, '92. In some respects these differ from those secured from Prof. Gillette and described above. They are a little larger; when boiled in liquid potash, they turn to a deep bright claret colour. The females were filled with young larvæ, and this might account for the size. The insect is viviparous.

Pulvinaria innumerabilis, subsp., *Betheli*, n. subsp.—♀ Scale dark brown, ovisac as in *innumerabilis*, cleared and pressed under cover glass 4 mm. in diameter. Derm practically colourless, slightly tinged with yellow. Antennæ 8-jointed; measurements are, in μ :

Joints	1	2	3	4	5	6	7	8
	68	56	80	72	44	28	52	44
	68	52	86	68	60	40	32	48

Front leg coxa, 120; femur and trochanter, 220; tibia, 160; tarsus, 92. Stigmatal spines thin, sharp, 24 μ long.

Hab.—On birch (*Betula*), in Colorado; collected by Prof. E. Bethel, sent to Prof. Cockerell by Prof. Gillette, who supposed them to be *P. betule*, Linn.-Signoret. In the antennæ it is near to *P. tilæ*, King and Ckll., but this scale is much larger and of a different colour.

NEW MEXICO.

These were sent by Prof. Cockerell in 1901:

Chionaspis pinifolii, Fitch., on *Pinus*, sp., at Arroyo Pecos, East Las Vegas, N. M.

Dactylopius gutierreziae, Ckll., on *Gutierrezia*, at Arroyo Pecos, East Las Vegas, N. M.; coll. Mrs. W. P. Cockerell.

Pseudolecanium Californicum, Ehrh., East Las Vegas, N. M.

Dactylopius pseudonifæ, Ckll., on house fern, East Las Vegas, N. M.

Orthezia occidentalis, Dougl.; alt., 8,000 feet above the sea level; Peulah sapello Canon, N. M.

Eulecanium pruinosum, var. *kermoides*, Tyrrell, 1896. This species was described in the Annual Report of the California Experiment Station, in 1896, by Miss M. W. Tyrrell, as *Lecanium pruinosum*, var. *kermoides*, found on oak in California. In Prof. Cockerell's Check List, p. 339, it is listed, and he states that he doubts if it belongs to *pruinosum*; in his first Supplement, p. 394, it is listed as a synonym of *quercitronis*. In October, 1902, he collected some scales infesting *Quercus Emoryi* (Emory's oak), at Las Vegas, Hot Springs, N. M., at about 7,000 feet alt.; examples of these he forwarded to me, and in his note accompanying them stated that he believed them to be *L. kermoides*. The ♀ scales are red-brown, kermes-like in shape, average size 3½ mm. in diameter and 3 mm. high. Antennæ 7-jointed; joint (1) 32, (2) 32, (3) 48, (4) 48, (5) 20, (6) 20, (7) 40; joints one and two are equal in most cases; three and four are equal, when not, joint four seems to be the longest; five and six are equal and shortest. Leg coxa, 96; femur and trochanter, 148; tibia, 100; tarsus, 68. The species in the antennæ comes near to *E. quercitronis*, Fitch. There is no doubt that *kermoides* is a distinct species. In a recent letter from Prof. Cockerell he says he believes Mr. Pergande holds that *kermoides* is a distinct species. It, however, belongs to a very puzzling group where the antennæ are very variable. In *quercitronis* I

have found joints 3 and 4 to be equal in length, sometimes 3 longer than 4, and again 4 would be longer than 3, and in one instance joint 3 was very long, 108 μ ; in this case joint 4 was only 24 μ long.

Pulvinaria innumerabilis, on *Aesculus octandra*, East Las Vegas, N. M., Oct. 14, 1902.

A NEW SAWFLY.

BY R. A. COOLEY, AGRICULTURAL COLLEGE, BOZEMAN, MONTANA.

The Sawfly here described is a common pest on the leaves of various species of *Populus* in Montana, and a Bulletin dealing with its life-history and economic significance is about to be published from the Montana Experiment Station. We give here an outline of its life-history, followed by descriptions of the two sexes.

The adults appear on the foliage in May and continue there for about eight weeks. The female deposits her eggs singly on the very young, tender leaves, and at the same time stings them in such a way as to cause the edge to fold under on the lower surface. The egg is found under the epidermis in the end of the fold nearer the petiole. One edge or both edges may be folded. The larva, at first, feeds in the fold, eating off the surface of the leaf, but later ventures out and eats holes in the leaves, always preserving the fold for a retreat. The cocoon is formed in the fold and drops to the earth with the leaf. This leaf, among the others on the ground, forms the hibernating place for the insect.

In this paper the writer has adopted the form of description used by Mr. C. L. Marlatt in his valuable "Revision of the Nematinae of North America."

Pontania Bozemani, n. sp.—*Female*.—Length 6 mm.; robust; emargination of clypeus a semicircle; lobes of the clypeus rounded; longest hairs of the mouth-parts about as long as the distance from lobe to lobe of the clypeus; lateral furrows of the vertex broad and rather shallow; ocellar basin distinctly defined; frontal crest almost absent; antennae moderately slender, 4 mm. long, with joints 3 and 4 subequal, joint 5 shorter, joints 6, 7, 8 and 9 still shorter and subequal in length; sheath acuminate, hairy below at the apex; claws cleft for one-third their length. Colours principally resinous-yellow and black; antennae, large spot on vertex, thorax above except sides of pronotum, dorsum of first abdominal segment, most of dorsum of second and spot on the next four